

PATHWAYS

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COMMUNITY SERVICE IN ST. THOMAS' SCHOOL, DELHI

(In the last issue of **PATHWAYS**, Mrs. Uma Subramaniam, Social Worker, St. Thomas' School wrote about the initiative taken by the School Social Workers Group, to involve school children in useful social work projects as part of the SUPW programme. We asked for a more detailed description of the work being carried on in her own school. She writes about the different projects and includes some reactions of the children, themselves.)

With the introduction of SUPW in the regular curriculum, community service has become a part of academic requirements. In St. Thomas' School, there is a wide variety of subjects available under the SUPW programme—Art, Craft, Traffic control, Music, Dance, Theatre-craft, Meal-planning, Gardening, Typing, Tailoring, Science Clubs, Remedial teaching of the “academically weak” students, Non-formal education classes for neighbourhood children, an Integrated project involving handicapped and retarded children, reading and writing for the blind. Besides these regular courses and projects, the senior students of the school participate in camps. This year they have had camps with the SOS Childrens Village and at the Cheshire Home. They have also taken part in specially designed camps in the areas of Public Health, Ecology and Preservation of the Environment.

Since community service is a relatively new field of study in the school system, it calls for a great deal of teacher preparation. Its objectives are to make children more aware of social disparities by giving them an exposure to and an experience in dealing with some aspects of larger social problems. The outcome of all community service programmes is a certain change in attitudes and in some cases a modification in one's behaviour. Attitudinal changes are gradual and subtle and can pale into insignificance in relation to a beautiful piece of art or a precise science experiment. Hence a teacher has to provide constant positive encouragement to the child, so that his or her interest can be sustained. Further a teacher has to guide and motivate the student to do still better by a general discussion which encourages thinking on new alternatives and methods.

The teacher has to be a role model. This is especially true in the realm of community service, where example is better than precept. Children observe the teacher's behaviour and attitudes. They expect the teacher to demonstrate through her actions. As a teacher, one cannot say one thing and act differently. This, in itself, is a challenge, as it calls for a reflection and re-orientation of the teacher's own attitudes.

Given here are some of the reactions of students involved in different types of community service projects. The contact on a person-to-person level with the less privileged has led to a number of revealing and important comments from our students, which I would like to share with you.

—Uma Subramaniam.

First Impressions of a Visit to an NDMC School

The children of Class VII A went to teach the children of Class V in the NDMC School. Each girl of my class took one child. We introduced ourselves on the very first day and said that we were there as 'friends' not teachers. On the next day we taught them something about good manners—being polite to everyone, helping others, keeping quiet and working hard. Apart from this we played some games with them, told jokes and stories.

My student was a girl named Poonam, who was eleven years old. She lived in a joint family. Her father was a sweeper at the Community Hall and earned Rs. 200/- per month. Poonam enjoyed all the games and even taught me some new ones.

We taught them a song and enjoyed it very much when they sang another song for us. I felt very happy to see lovely, sad faces laughing and shining with joy.

—Himani Singhal, VII-A

My student, Baby Kumari, is 11 years old. In reply to my questions she told me, "My father works in the N.D.M.C. He is a Matador driver. He gets Rs. 210 per month. My mother is a maid servant. She gets Rs. 65/- per month as a salary. We are three sisters and two brothers. My elder brother works with my father. My father is a Matriculate and my mother has studied up to the 6th class. My brothers have studied up to the 7th class. My sisters have studied up to the 4th."

I asked her, "Who comes first in your class?" She said in a humble voice, "I".

I taught her addition and subtraction and Hindi too. Her difficulties were in English and Mathematics. I am trying to solve these problems of hers.

She said that she never takes a holiday "because it is useless to sit at home. It is better to come."

—Sharbani Dutta, VII-A

Experiences of the Non-Formal Education Group

To be frank, initially, I had hardly any interest in such work. The mere thought of dirty surroundings and the way of living of the people in the community where I was to work, discouraged me from such work. It was compulsory and I took it up unwillingly. I could hardly bear the first few visits; I did not like the unclean, stinking area; the way the messy, untidy children stuck to us and many other things. We often argued with our teacher on the subject of whether we should quit the NFE project or stay on with it. Surprisingly our teacher always had a suitable answer ready for problems and doubts.

Slowly I started settling down, getting used to my work, though the adjustment took some time. I began to understand the people I worked with. The children are actually most interested in their studies. For them it is great fun when we come and teach them; they mix freely with us and trust us more and more.

I have tried my best to bring about a change in their way of living and this seems to have definitely changed the appearance of some of the children. They try to look clean and smart, to at least get their hair combed, to have clean hands, legs, and nails. I have taught them something about health, hygiene and cleanliness.

Much depends on my attitudes and my reactions towards them. It is a give and take process. While we educate the illiterate children of the community, we also learn much about the actual poverty faced by people. This experience has enriched my knowledge about the reality of our country.

—Vidya Narasimhan, IX-A

I teach a group of about six boys, doing mainly remedial work with them. I revise chapters already done and once they know them thoroughly, I go ahead with the new chapter. Some of these boys do become rowdy and then I get mad! When I look back on what I am doing, I have mixed reactions. Is it simply a sheer waste of time? Many of the children don't respond in the way I want them to and then I get discouraged and disappointed.

—Ruth Lall, IX-A

With various fears in my mind, I went to the Balmiki Basti, which is very near the school. The place was smelly and filthy and the atmosphere was very different from ours. Nevertheless, we went from house to house and got as many names as we could for our students. We used to exchange glances and wonder how our teacher could step inside their dingy homes. When asked, she said that the interiors were clean. To our surprise, when my friend and I went into one of the houses, the inside was spotless. To top it all, the people were so cordial and courteous. The students were intelligent and went to school. They were obedient and well-behaved calling us 'Didi' or 'Auntyji'. They quickly picked up whatever we taught them.

—Sonali Shanbhogue, IX-A

We used to teach the kids using various aids such as Dominoes and Missing Number Games. We had many problems such as non-attendance of the children, inability to grasp the lessons quickly, their naughtiness and being easily distracted from their studies, remarks passed by boys in that area and the lack of interest on the part of the children's parents. We had often to go and collect the children from their homes, ourselves. Lessons had to be repeated for many days and an interest created. Ignoring remarks about us was the only solution to that particular problem. However, while our failures may have been many, we gained confidence, learnt to be patient in teaching the illiterate and facing our problems.

—Arti Jain, X-A

While I was teaching my students, two very little boys of perhaps 3 or 3½ years came near me and smiled. I was so thrilled that I picked up one of them in my arms and asked their names. They were too small to reply to my questions. Then I took both of them to my friends. Suddenly they got frightened and started to run away. I had some coloured picture books which I showed them. They sat down on the grass and started to look at them. I gave them a pencil each and told them to play with it. I developed confidence through these little experiences.

—Vanita Kukreja, X-A

Suggestions :

- (i) Please don't take Star and Style or comics over there; don't start reading them or discussing film-stars over there.
- (ii) Take the attendance daily. They should know that you are also interested in teaching them.
- (iii) Please tell them before if, for some reason, you are going to be absent; if not their parents say that you don't come regularly.
- (iv) If someone is untidy, don't think that he is an untouchable. Tell him what he should do next time-comb his hair, clean his face, cut his nails etc. Next time if he is not clean, take things like oil, soap, comb and nail-cutter with you and help that particular child to become clean.

—Samita Mehta, X-A

This is what two of the children of the Basti say about their experience of the Non-Formal Education Project. Anil is a student of Class V and attends the second shift school. He said that he liked to come to the classes run by the St. Thomas' girls as there was no one at home who could help him in his studies. Satish Sood, a thirteen-year old boy, is a school dropout. He has studied up to Class III. He is at present living with his uncle and aunt in the

Balmiki Basti, although his parents are in Bombay. He could not get admission in the local school and so he finds the N.F.E. classes useful. He has a flair for Art and does a lot of portraits. His ambition is to join the "Military" and his hobby is to read comics. The N.F.E. helps him to keep in touch with the subjects so that he can hope to join the local school at least next year.

Remedial Teaching in the School

The whole of my class is involved and we have one pupil each. We are asked not to teach so much subject matter, but concentrate on strengthening their general foundations. In one class, we conducted a simple test on a previous lesson and found a general flurry when a 'test' is mentioned accompanied by constant bickering and grumbling. The students lacked confidence in expressing themselves in writing. Verbally they could do better. One striking feature of our dealing with them is that we've become friends. After only a few classes, I realised that to be a good communicator I needed a lot of patience, the right technique and approach to the subject, sufficient knowledge of them as persons and plenty of tact.

This activity has created much awareness in me about the importance of our dealings with others. It provides scope for deeper involvement and to help others; to give and to take.

—Harmeet, XII

My Experience in the Child Guidance Clinic

In this clinic, which is next to our school, we worked twice a week last year with three groups of children. Group A contains children who can overcome their disabilities while those of Group B can only be normal to some extent by trying hard. A third group contains those who are severely handicapped and cannot overcome their difficulties. The children are given education and a few lessons on environmental awareness, good manners and helped to become self-reliant. The head of the clinic told us about the children and we were a little surprised, a little upset and confused. We divided ourselves into three groups and started.

In the beginning it was difficult; we didn't know how to handle the children; could not make out what impairment they had and how to make

them work; could not play or teach them in a group as each had a different disability. The children did not show interest; often doing just the opposite of what we asked them to. It was hard to find out if they understood us. We learnt how to overcome our problems; learnt to use colourful, attractive teaching aids; teach a few things at a time.

My student, Arti, had a problem in walking. In spite of her physical handicap she was very friendly and loving. I did pasting work with her which she enjoyed, taught her the names of colours, fruits, vegetables etc. She was very conscious of her bangles. Once I brought a pair of bangles for her, but she refused them.

It was a wonderful experience to know somebody's feelings.

—Sapna Mahajan, IX-B

My Experience with Vinay, a Blind Brother

In Class IX, I got an opportunity to write for Vinay Kumar, then a blind student of Nutan Marathi School. His manners, courtesy and intelligence impressed me. For three days continuously I wrote for him. This helped me to get some ideas about him and we decided to correspond regularly. Vinay is from Kanpur. He now stays at the Government Hostel for Blind Boys in Kingsway Camp.

On my return home from school one day, I received a letter from him. How happy I was! He had secured 78% and stood first in his class. And he gave the credit to me—a great example of modesty! I was touched by the feelings of gratitude he expressed.

I sent him a Rakhi, as he has no sister. We have maintained contact through letters and telephone calls. We talk about studies, school activities, outings, politics and books. It has been more than two years since we met and I've got to know him well as an individual. He has brains; is aware of his surroundings; has many talents, plays the harmonium, takes part in debates and recitation and writes poetry. What I appreciate most about him are his self-confidence, determination and self-respect. He has no complexes; is a very warm and genuine person; honest and he stands up for his principles.

My experience with Vinod Bhaiya has been very enriching. I have learnt a lot from him.

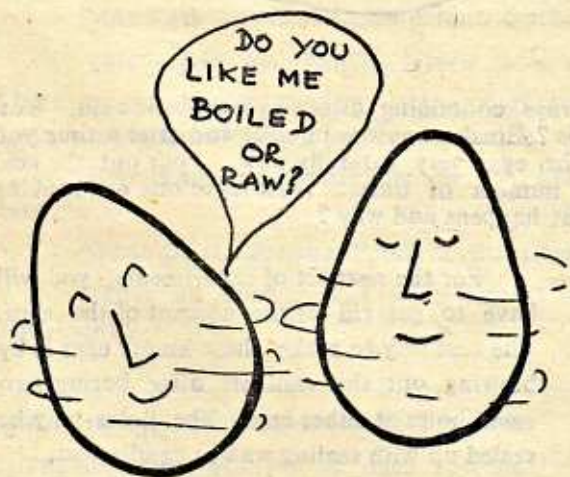
—Sharmila Mahajan, XII-H

Some Egg-Cellent Ideas for the Classroom

Shakuntala Bhattacharya

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Eggs are a very common resource, which can be used to generate many interesting discussions in the classroom. I have culled some activities from various sources with the hope that the readers of 'Pathways' will come up with some more 'egg-cellent' ideas.



1. Do you like your eggs boiled or raw?

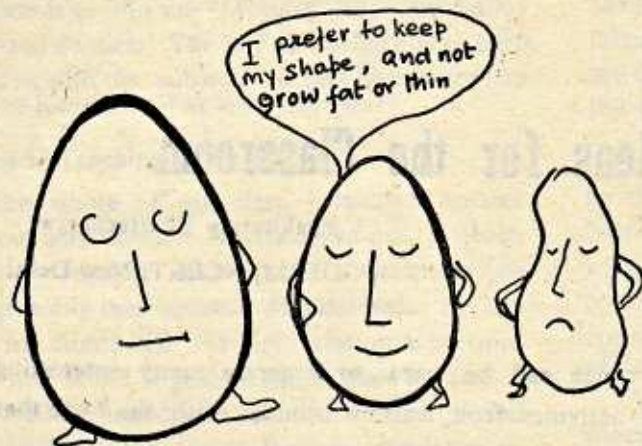
Take a hard boiled egg and a raw one. Ask your class if they can distinguish which is the boiled one? Don't scratch your head, it's really quite easy. Just spin both of them and bring them to a stop with your finger. The hard boiled egg will stop but the raw one will continue turning slowly. Why?

2. The floating egg

Take a tumbler half full of concentrated salt water. The concentration of salt should be high enough to cause the egg to float. Now carefully pour ordinary water down the side of the glass so that the two don't mix. The egg will remain floating in the middle. Why? Can you make the egg sink to the bottom?

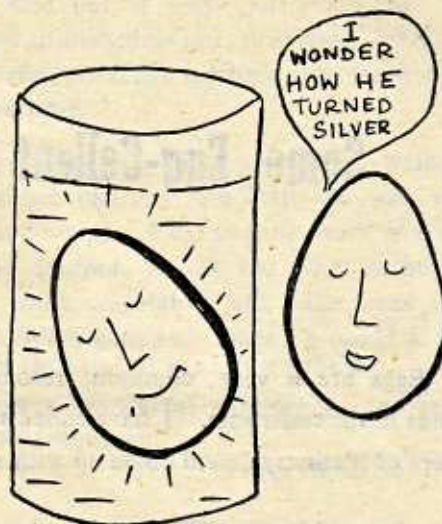
3. The egg that refuses to drown

Take a glass tumbler and fill about one quarter of it with hydrochloric acid (the bathroom cleaning one would do). Add half a tumbler of water and stir well. Now gently lower an egg to the bottom of the glass. In a few minutes it floats up. Why?



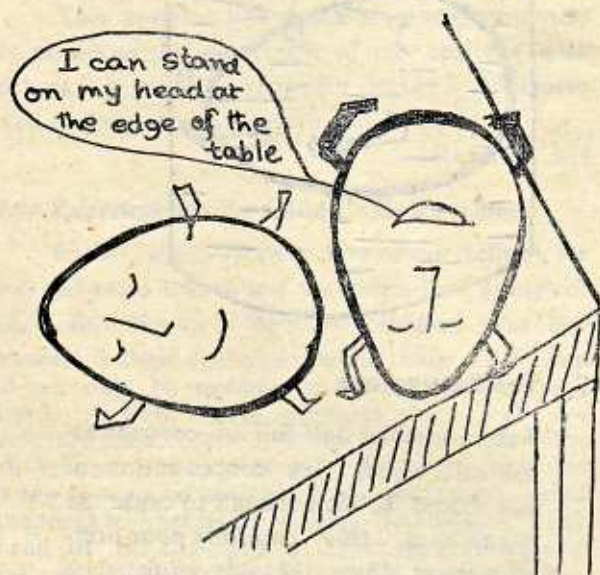
4. A silver egg

Coat an egg with soot from a candle or oil lamp. It appears black. Dip the egg in a glass of water. It turns to silver. Outside, it is again black. Why?



5. Eggs fat and thin :

Take two eggs and carefully place them in trays containing dilute hydrochloric acid. You will soon see bubbles on their surfaces. What causes this? Brush away the bubbles and after a time you will find that the hard coat has melted away. Handle the eggs very carefully now. Pour out the acid and rinse carefully by pouring in water into the trays a number of times. Now leave one egg soaking in water and the other in a strong sugar solution. What happens and why?



For the next set of experiments, you will have to get rid of the content of the eggs. The best way to make these empty eggs is by blowing out the contents after boring two small holes at either end. The holes may be sealed up with sealing wax or candle wax.

6. Humpty Dumpty doesn't have a fall

Close one end of an empty egg with wax, and pour in sand, or tiny glass beads into the egg till it is about one third full. Seal the open end. Now the egg will stand in any position even on the edge of a table leaning over if the surface is not too sloped. How does he do this?

The disobedient egg

Make a disobedient egg—he just likes to stand in one position and will turn up in that position always. Take an egg with one hole sealed. Fill about one-sixth with iron fillings or any such heavy things. Pour in glue and allow it to dry and set in one position. You may use plaster of Paris if available. Seal the other end. Mr. Disobedient egg will always stand up the same, however you may correct him. Why?

Think a while on these problems and then look up the answers on page 7. And if you have any egg-cellent ideas please pass them on to the author.

Who is at Fault ?

This is an incident narrated to me a few days ago. I wish to share it with readers not because it is amusing, but because there is a grave lesson to be learnt from it. A warning bell rings every time in similar situations, but we seem to be innately deaf to its call.

It is admission time in a school and a nervous parent waits outside while his 3 year old child's fate is being decided inside the classroom. The parent mentally goes over all that he has taught the child in the past weeks.....

"A—for apple, B—for ball, C—for cat, D—for doll, E—for egg, F—for fox....." and so on."

He smiles confidently, feeling assured that his child will get that much sought-after admission.

Meanwhile, inside the classroom, the teacher is drawing a big fat *elephant* (to perfection) on the blackboard. In her encouraging voice, she says, "E—for.....?"

The child pulls himself up, recalls the lessons of the past weeks and announces triumphantly, "E—for EGG."

A second try, "E—for.....?"

The child, with growing confidence, "E—for EGG."

Outside, the parent is in tears as this ping-pong of "E—for....." continues without either side giving in.

May I ask who is at fault—parent, teacher or child ?

This reminds me of advice given to us at a teachers' workshop which I attended in 1975. 'There are no wrong answers only wrong questions. Before you condemn an answer as wrong, always cross-check to see if you have asked the right question.'

Here is another classic example. A question asked in the annual history examination for Class 5.

What did the Pancha Pandavas do after their father died ?

"They all cried", was the eloquent answer of a child who had been through a similar crisis recently.

—Malini Rajendran

Answers to Egg-cellent Ideas for the Classroom

1. The boiled egg will stop at once but the raw egg will go on turning slowly. This is because the contents of the raw egg are liquid, and this part continues to turn even though a brake was applied to the outer layer. You can explain this better if you swirl a dish full of water with a circular motion and then place it on the table. The dish will be at rest but the liquid will go on moving.
2. The brine has a higher density therefore the egg floats on it, while it sinks in pure water. In this case it floats in the middle on top of the brine.
3. This is because the calcium carbonate in the egg shell reacts with the acid, producing bubbles of Carbon dioxide which stick to the egg and make it rise to the surface.
4. The black soot on the surface of the egg is not soluble in water and air is trapped between carbon particles. There is total internal reflection giving rise to the silvery look.
5. The first egg gets fat due to endosmosis (or absorption of water) and second one becomes thin due to exosmosis (water is drawn out of the egg by the stronger sugar solution).
6. & 7. The egg in case (6) has a shifting centre of gravity as the sand moves inside it while in the case of the disobedient egg, its centre of gravity is at a fixed point and therefore it comes to rest in a particular position.

Understanding Concepts in Fractions

By Ms. Annie Jose
St. Xavier's School, Delhi

Working in the Mathematics laboratory of St. Xavier's Junior School, we find that young students often have difficulty in mastering some basic ideas about fractions. While the methods that I share with readers in this article and the next may not be exactly new, they have helped our students effectively in grasping both concepts and operations with fractions.

At first, all the students are asked to cut out three circles of equal size in paper. The first circle is cut into two equal parts. The children already know that each part is one half of the whole. They are now told that half is written as $\frac{1}{2}$, where 1 is called **numerator** and 2 is called the **denominator**. The fraction is named "one over two" or "one upon two". One half circle is further divided into two equal parts and by comparison with the whole circle, the students find that each part is now one quarter of the whole. This fraction is written as $\frac{1}{4}$ which means that the whole is divided into four equal parts and one part is taken. One quarter divided into two parts and this process of sub-dividing goes on till they know the meanings of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ and $\frac{1}{16}$. In each case the comparison of the

fractional part with one of the whole circles left with them gives them an idea of how the fraction is related to the whole.

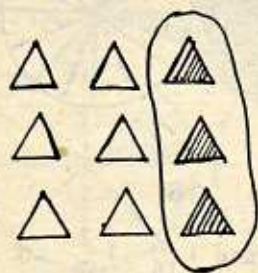
Further questions ensure that they understand the meaning of fractions like $\frac{1}{5}$, $\frac{1}{15}$, $\frac{1}{45}$, $\frac{1}{100}$ and so on. Note here that in each case the whole or 1 is divided into a number of equal parts and one such part is taken. In other words, in all the fractions dealt with upto now the **numerator** has been 1.

They next cut the second circle into 16 equal parts. Each part represents $\frac{1}{16}$ of the whole. First one piece is compared with the whole, ($\frac{1}{16}$ = one part taken out of 16 equal parts), then two parts are compared with the whole ($\frac{2}{16}$ = 2 parts taken out of 16 equal parts), then three parts.....and so on. Each time they name the fraction and compare it with the whole circle. In this case the **denominator** remains the same throughout the exercise.

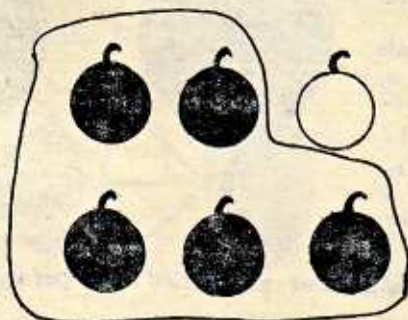
Children need to know that **fractions are not just numbers and have many physical meanings**. The above procedure is repeated using beads, giving each child 16 of them. Questions of the following type are asked : Find out

- 1) How many in half a class of 40 students ?
- 2) How many in one quarter of a box of 100 marbles ?
- 3) How much in one-fifth of a kilogram of sweets ?
- 4) How much is two-thirds of Rupees 60/- ?
- 5) If one cake is shared between three boys what fraction of the cake each boy would receive ?

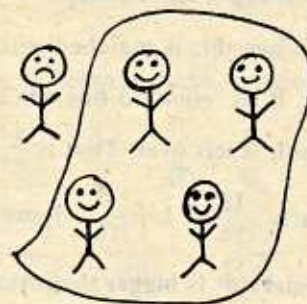
They also make drawings representing simple fractions.



$$\frac{3}{9}$$

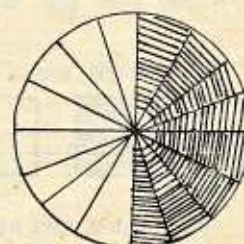
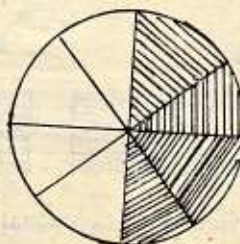
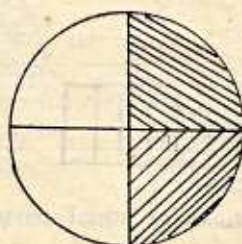
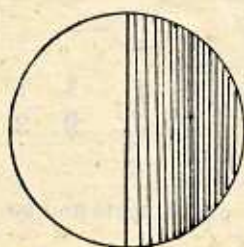


$$\frac{5}{6}$$



$$\frac{4}{5}$$

Equivalent fractions. The sixteen small pieces cut from the second circle and the $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}$ (2 pieces of each) as well as the remaining whole circle come in handy for this exercise. By matching pieces against the complete circle, students are able to find out that two sixteenths will occupy the same space as the one-eighth piece. Thus, $\frac{2}{16} = \frac{1}{8}$. Further matching exercises lead them to finding the equivalence between $\frac{4}{16}, \frac{2}{8}, \frac{1}{4}$. They can then write $\frac{4}{16} = \frac{2}{8} = \frac{1}{4}$. Similarly, they arrive at the conclusion that $\frac{8}{16} = \frac{4}{8} = \frac{2}{4} = \frac{1}{2}$.



$$\frac{1}{2} = \frac{2}{4} = \frac{4}{8} = \frac{8}{16}$$

$$\frac{1}{5} = \frac{2}{10} = \frac{4}{20} \quad \text{and} \quad \frac{1}{4} = \frac{2}{8} = \frac{4}{16}$$

While children enjoy this process of working with their hands, the entire lesson can be speeded up by using large size circles of different coloured papers and fixing them on to flannel boards.

Kinds of fractions : So far we found that if the sixteen pieces cut out of a circle (or even a strip) were put together again, they did not become more than the original circle. Each piece was smaller than the whole. In other words, the numerator was always less than the denominator, and the fraction itself was less than one. Such fractions are called **proper fractions**. The teacher, at this point also ensures that the students understand that if numerator and denominator are equal, as for example,

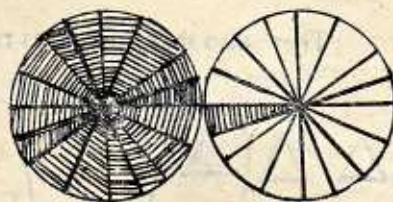
$$\frac{16}{16}, \frac{8}{8}, \frac{4}{4}, \text{ the fraction is equal to } 1.$$

If a few more pieces of the same one-sixteenth size are cut out and we add one to the first group of sixteen, we now have $\frac{17}{16}$. When this is matched with the whole circle, it is equal to one whole and one-sixteenth is left over. That is $\frac{17}{16} = 1 + \frac{1}{16}$.

Similarly $\frac{18}{16} = 1 + \frac{2}{16}$. Fractions where



$$\frac{15}{16}$$



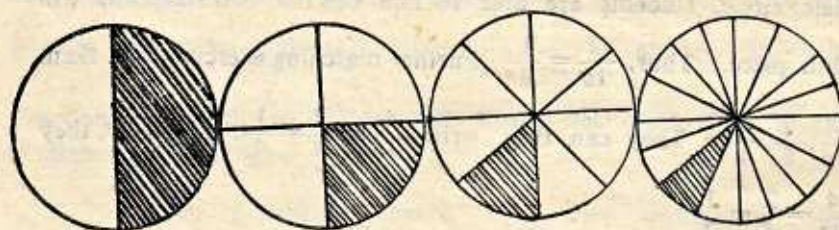
$$1\frac{1}{16}$$

the numerator is bigger than the denominator are called improper fractions and $1\frac{1}{16}$, $1\frac{2}{16}$ are called mixed numbers. We can change improper fractions to mixed numbers and vice versa.

Comparison of fractions

i. When numerators are the same and the denominators are different :

The student's attention is drawn to the sizes of the pieces cut out from the whole circle, as shown in this diagram. The same activity can be tried out using long strips.



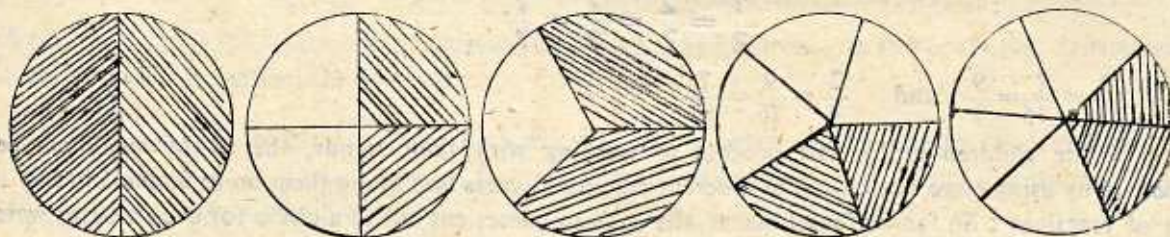
Fill in > or < between the fraction

$$\frac{1}{2} \quad \frac{1}{4} \quad \frac{1}{8} \quad \frac{1}{16} \quad \frac{1}{32}$$



$$\frac{1}{3} \quad \frac{1}{2} ; \frac{1}{2} \quad \frac{1}{9} ; \frac{1}{9} \quad \frac{1}{3}$$

Next the circles are divided into two equal parts, three equal parts, four equal parts and so on and in each case two parts are taken out



$$\frac{2}{2}$$

$$\frac{2}{4}$$

$$\frac{2}{6}$$

$$\frac{2}{8}$$

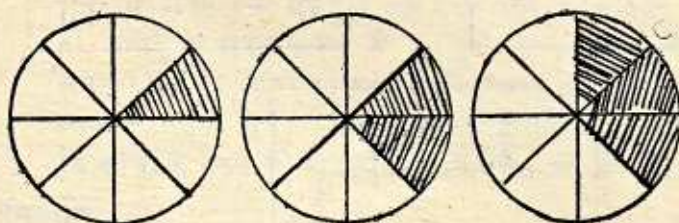
$$\frac{2}{10}$$

Fill in > or < between these fractions

$$\frac{2}{2} \quad \frac{2}{3} \quad \frac{2}{4} \quad \frac{2}{5} \quad \frac{2}{6}$$

ii. When the denominators of the fractions are the same and the numerators are different:

The children notice that as more pieces are taken out of the whole, a greater part is removed. They conclude that when the whole is divided into a given number of equal parts, if more parts are taken, they will represent a greater fraction.



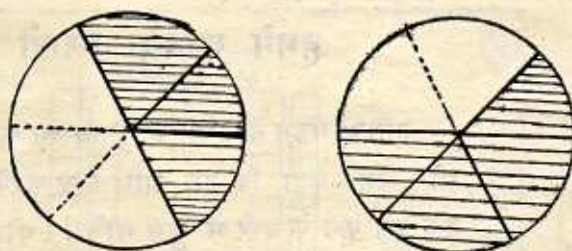
Fill in $>$ or $<$ between these fractions.

$$\frac{1}{8} \quad \frac{2}{8} \quad \frac{3}{8} \quad \frac{4}{8} \quad \frac{5}{8} \quad \frac{6}{8}$$

$$\frac{7}{15} \quad \frac{8}{15}; \quad \frac{7}{26} \quad \frac{11}{26}; \quad \frac{105}{200} \quad \frac{80}{200}$$

c) Comparison of unlike fractions

When we ask, "Which is bigger $\frac{1}{2}$ or $\frac{2}{3}$? or $\frac{3}{4}$ or $\frac{4}{5}$?", it is not very easy for the children to answer or for them to directly apply knowledge gained in the preceding exercises. An analogy might help. If we want to know whether a rupee is more than three 25 paise coins, we realise that we are actually asked to compare the number of paise in each. In other words we have to compare them in the same units, namely paise. One rupee contains one hundred paise while three 25 p. coins make 75 paise; hence one rupee is bigger than three 25 paise coins. Similarly, the $\frac{1}{2}$ and $\frac{2}{3}$ have to be parts taken out of the same number of equal parts if we are to compare them. The students are told to cut a half circle into three equal parts and a $\frac{2}{3}$ circle into four equal parts. They then find that the size of the new pieces is equal. When these pieces are matched with a whole circle, each small part is discovered to be one-sixth of the whole.



$$\frac{1}{2} = \frac{3}{6}$$

$$\frac{2}{3} = \frac{4}{6}$$

Now we can say

$$\frac{4}{6} \text{ is more than } \frac{3}{6}$$

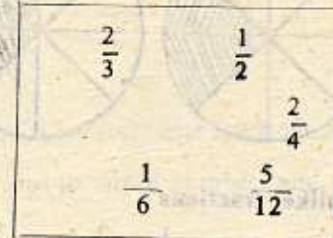
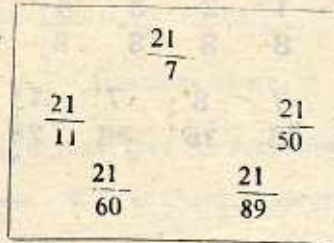
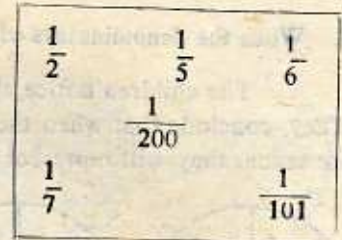
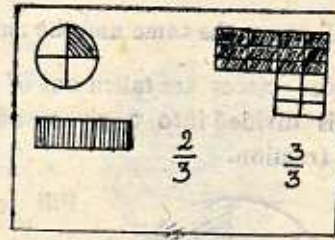
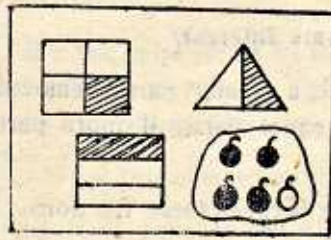
$$\text{Hence } \frac{2}{3} > \frac{1}{2}$$

It is also pointed out that six is the lowest common multiple of 2 and 3

Similarly children can find out the relationship between $\frac{3}{4}$, $\frac{4}{5}$ and other examples.

A game can be played to give students further practice in comparing fractions, 40 to 60 cards are made with different fractions written on each. Some samples are shown overleaf.

Students play in groups of four with each couple forming a team. Each player keeps ten cards with him and has rings, discs or pegs. The first player places a card face upwards in front of the whole group. He then rings the largest fraction or fractions on the cards. If he is right, his team wins ten points. If he is wrong, the other team points out his mistake and the first team loses five marks (5). The game continues with the first player of the second team and then the second player of each team until all the cards have been dealt out. Doubts at any stage are clarified by members of the groups of the teacher.



The cards can be written out or drawn on card paper of 15 cm × 10 cm size. They should be graded so that they become progressively more difficult. The game can be repeated a second time asking the children to ring the smallest fraction or fractions. To make it more complicated, students could be asked to point out both the largest and the smallest fractions on each card. This exercise also helps them to think quickly and do mental arithmetic.

(The next issue of PATHWAYS will contain a second article by Ms Annie Jose dealing with different operations involving fractions).

गुलाब पर कविता

यह चाचा नेहरू का फूल,
बहुत ही सुन्दर न्यारा है।
चाचा नेहरू के कोट पर लहराया,
लगता कितना प्यारा है।
चाचा नेहरू का गुलाब,
उनकी याद दिलाता है।
लगता है यह हर बाग में,
चाहे हो अमीर चाहे हो गरीब का।
इसकी खुशबू सबको भाती,
इसका रस ले तितली उड़ जाती।
इसकी पत्ती होती अच्छी,
इसकी खुशबू होती अच्छी।
सुन्दर है रंग इसका कितना,
लाल, हरा, नीला और पीला।
सबके मन को बहलाता है,
चाचा नेहरू की याद दिलाता है।

कक्षा III के विद्यार्थी
नवयुग स्कूल
विनय मार्ग, नई दिल्ली

हमने कविता लिखी

हमारी मैडम ने हमें एक गुलाब का फूल दिखाया और हमसे कहा कि हम आँखें बन्द करके ५ मिनट तक उस फूल के बारे में कुछ सोचें! थोड़ी देर बाद मैडम ने सब को आँखें खुलवायी और कहा कि हमने फूल के बारे में जो कुछ सोचा है उसे दो-दो पंक्तियों में लिखें। हमने छोटे-छोटे कागज पर लिख कर दो। मैडम ने वे सारे कागज बारी-बारी से एक चार्ट पेपर पर चिपका दिये और हमसे उन्हें पढ़ने को कहा। जब हमने पढ़ा तो देखा कि वह गुलाब पर एक सुन्दर कविता बन गई।

—अर्चना शर्मा

कक्षा में छात्रों के बैठने की व्यवस्था

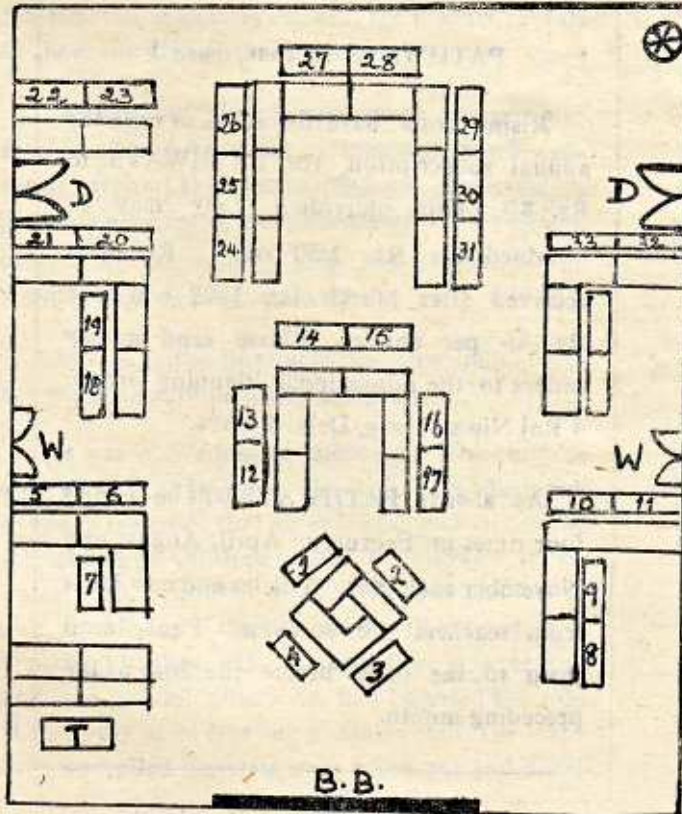
(समस्या-समाधान-उपलब्धियां)

समस्या :-

अपने अध्यापन काल में मुझे कुछ समस्याओं का सामना करना पड़ा। वास्तव में ये समस्याएँ नहीं थीं अपितु अध्यापन के क्षेत्र में नए होने के कारण मुझे समस्याएँ प्रतीत होती थीं। इनमें एक समस्या थी कि छात्रों को कक्षा में किस तरह बैठाया जाय, इनके बैठने की व्यवस्था को कब बदला जाय इत्यादि। चूंकि इस काम को करने में काफी समय लग जाता था इसलिए यह जानते हुए भी कि छात्रों के बैठने की व्यवस्था को नियमित रूप से बदलना चाहिए मैं न कर पाती थी।

समाधान :-

आखिर मैंने इस समस्या का समाधान इस प्रकार किया। मेरा यह प्रयोग प्रथम कक्षा के छात्रों के साथ था जिनमें 75% छात्र इस प्रवृत्ति के थे कि एक क्षण के लिये चुप व स्थिर नहीं बैठ सकते थे। अपने इस प्रयोग के लिये मैंने 39 माचिस की डिब्बियाँ लीं। छात्रों से उन पर भूरा रंग करवाया। माचिस की डिब्बियों के ऊपरी भाग को मेज़ का और अन्दर वाले भाग को कुर्सी का प्रतीक मान कर, कक्षा के एक बोर्ड पर ठीक उसी प्रकार लगा दिया जिस प्रकार से कक्षा में उनके मेज़ कुर्सियाँ रखे थे। अब 35 कागज़ को पंचियाँ काट कर उन पर अलग-अलग रोल नं० लिख दिये। प्रत्येक पची को कुर्सी वालो डिब्बिया के अन्दर लगा दिया। अब एक सूची बनाकर उन पर छात्रों के रोल नं० व नाम लिख दिये। यह इसलिए कि अगर कोई छात्र अपना रोल नं० भूल जाय तो सूची में से देख ले। अब प्रत्येक शनिवार को उन पंचियों को जरूरत के अनुसार अदल-बदल दिया जाता और सोमवार को छात्र अपने रोल नं० की लगी पंचियों के अनुसार बैठ जाते।



R. No.	NAME	R. No.	NAME
1		20	
2		21	
3		22	
4		23	
5		24	
6		25	
7		26	
8		27	
9		28	
10		29	
11		30	
12		31	
13		32	
14		33	
15		34	
16		35	
17		36	
18		37	
19		38	

उपलब्धियाँ :

यद्यपि यह प्रयोग एक समस्या को सुलझाने के लिये किया गया था फिर भी इससे छात्रों ने काफी कुछ सीखा जो निम्न हैं :—

- (1) छात्रों में selfdiscipline की भावना आई। अब छात्र अपनी पर्ची देख कर स्वयं बैठने लगे।
- (2) इससे समय की बचत भी हुई। जहां इस काम में 20-25 मिनट लगते थे अब 5 मिनट में ही यह काम होने लगा।
- (3) अप्रत्यक्ष रूप से छात्रों में निम्न कौशलों (skills) आये :—
 - (क) Mapping :— छात्रों ने 'मेरी कक्षा' Social Studies में पढ़ा तो उन्हें कक्षा का मानचित्र बनाने में सुविधा हुई। इसी आधार पर उन्होंने अपनी पाठशाला, अपने घर के मानचित्र बनाये।
 - (ख) किसी चीज या वस्तु की स्थान (location) कैसे जानी जा सकती है छात्रों को इसका भी अभ्यास हुआ। छात्रों को ज्ञात हुआ कि किसी Map को पढ़ने से पहले Index को पढ़ना जरूरी है।
 - (ग) छात्रों को मानचित्र कैसे पढ़ा जाय इसके बारे में जानकारी हुई। और उस मानचित्र को कैसे दूसरों को समझाया जाय। इसी आधार पर छात्रों ने भारत की दिशाएँ सीखीं।
 - (घ) छात्रों को इस बात की भी जानकारी हुई कि three dimension जीज को two dimension में कैसे प्रस्तुत किया जाता है।

हरदीप जगदेव

नवयुग स्कूल

बिनय मार्ग, नई दिल्ली

भूख

भूख सभी को लगती है,
हो वह गरीब या हो वो अमीर,
हो वह बुरा या हो अच्छा,
हो वह भूठा या हो सच्चा।

चाहे कोई हो राजा,
या कोई हो रंक भिखारी,
भूख सभी को लगती है,
चाहे कोई काम करे या
घर बैठे वह खाली।

कोई खाता बढ़िया खाना,
कोई खाता घटिया खाना,
हर कोई कुछ न कुछ खाता,
जैसा कोई जुटा है पाता।

खाने की ही नहीं है भूख,
किसी को है दौलत की भूख,
पेट की भूख तो खाने से मिटती,
पर न मिटती दौलत की भूख,
हर तरफ ही फैली है यह भूख,
यह भूख ! भूख ही भूख।

RUCHI GUPTA

V-C (1981)

Holy Child A.I.

Hr. Sec. School, New Delhi

PATHWAYS to cost more !

Rising costs have forced us to raise the annual subscription for PATHWAYS to Rs. 8/-. Each individual copy may be obtained for Rs. 2/50 only. Renewals received after March 1st, 1982 will cost Rs. 8/- per annum. Please send money orders to the Educational Planning Group, 4 Raj Niwas Marg, Delhi-110054.

As always PATHWAYS will be issued four times in February, April, August and November each year. Articles and new ideas from teachers are welcome. Please send them to the office before the 20th of the preceding month.

SCHOOL UNDER SIEGE

—Language Teaching with A Difference

Yes, language teaching has assumed multi-dimensions with the fast changing modern methodologies in teaching.

Class : VIII

Topic : School Under Siege

Introduction : The English teacher intercepts the students during the last two minutes of the previous period (to her own) and announces to the students, that the principal has issued orders that everyone should stay back in the school campus since a dreadful epidemic has gripped class VII students and until they are free from this disease, everyone will have to be quarantined for three weeks.

Silence follows, the initial reaction being one of fear and restlessness followed slowly by mixed feelings of doubt and disbelief. After having created the necessary mood, the teacher reveals to them the idea of the theme work.

As with any other theme work, this one also aims at all possible types of language work centering around this theme 'School Under Siege'. Students get a real-life experience of writing letters, composing poems, bringing out newsitems and a wide range of practical work.

Mrs. Kavitha Bhattacharya now tells us of her experience in handling the project :—

It was a Wednesday morning. The children were at work. I entered the class, very flustered, to break the news that an epidemic had struck the school and no children would be allowed to go home. The children looked at one another in awe, wondering if the teacher was in her senses. I explained to them that the situation was serious and the school authority had imposed the rule. It was only after creating a climax that the carefully compiled booklets were taken out and distri-

buted to the children. There was a sigh of relief.....—a sense of excitement! This gave a beginning to my project on 'School Under Siege'.

The fever had struck the class. The interest shown by the children encouraged me to carry on. The children were allowed to work in groups, pairs or by themselves. They worked in the class and also at home. The ideas, poems, writings, drawings that the children produced could hardly be believed. Given here are few samples of their creative writing; the lovely poems they wrote.

I MISS

I miss the life of my little den,
I miss the company of my dear friend,
I miss the smile of my brother's face.
I miss the zig-zag staircase.
And most of all I miss the time
I had with my 'Tine' (cat)
I miss the large dining hall,
I miss the carved roof and walls,
I miss the lovely carpet shine
Where often I sit and dine.
And most of all I miss the time
I had with my tiny 'Tine'.

— Ruchika Arora

One could actually feel what they might have missed.

My Worst Teacher

My teacher is a big fat elephant,
And her colour is darker than night,
She marches into the class like a torrent
Oh ! God, she is a terrible sight !!!
My teacher is like Death's army marching
towards me,
Her teeth are like jagged rocks devouring
ships.
Her hair is worse than witches' broom,
And her nose is a big fat laddu.

My teacher is a battle tank
Roaring at the enemy
The enemy is us,
And roaring is the lessons ! !

My teacher is a haughty jailor
Who keeps us (prisoners) in a cell which she
calls classroom.
She tortures us each day
And goes on till our minds are worn away.
—Sangeeta Khanna

It was not only poems, but letters, dialogues, paintings, stories, recipes and so much more that made the project colourful, exciting, interesting. The best part of it was that the children were spontaneous in their reaction. A point worth mentioning here is that the children worked on

the project with no compulsion and worked at their own pace. It was as if there was a sense of achievement at every stage, with every exercise.

This type of project work not only brings out the creative talents in a child but gives the teacher a relief from boredom and a supreme sense of satisfaction that she has brought in innovation into her teaching.

("School under Siege" was—compiled by Mrs. Meera Govil, formerly co-director, Teachers' Centre, Springdales School, Pusa Road, New Delhi-110060. Copies can be made available, only on request, at a cost of Rs. 4/- each plus postal charges.)

—Mrs S. Sunderarajan
Director, Teachers Centre
Springdales School, New Delhi

The Role of Environment in the Development of a Child's Personality

Modern developments in the field of education emphasise that education should be organised according to the nature of a child. This nature depends upon two factors—heredity and environment. Here, however, we shall limit our discussion to the role of environment in the development of a child's personality.

Before we go into any detail about this subject, I would like to state what we mean by environment. In the ordinary sense of the term, environment means all that is found around the individual. To quote Douglas and Holland, "environment is a word which describes, in the aggregate, all of the extrinsic (external) forces, influences and conditions which affect the life, nature, behaviour and the growth, development

and maturation of living organisms". In fact, environment constitutes, all which is found in the child's mental, moral and spiritual universe.

Now, this environment plays an important role in the development of child. Right from his birth, as the child grows up and passes through different stages, he is influenced by environment. Just as a seed needs soil, sunlight, manure, water and many other favourable factors, a human child also needs education, sympathetic parents, and teachers and the amenities of modern material civilisation if he is to fit into this society. In the absence of a suitable environment a child cannot achieve its maximum possible intellectual stature.

For example, we often hear the complaint that a particular child is rash and obstinate. He neither does anything at home nor in school. We must, at no stage give up interest in this child's education—we must try to find out who or what is responsible for making him so. To do that we will have to make a study of the environment in which he grows. This is no easy task, but with a little trouble, it can be taken up.

Our next problem will be how to take up that study? First of all we will have to make a study of his relations with his parents, for parents are his first companions and it is from the home that he steps into the outside world. This study will bring to light the following points—whether the atmosphere is congenial for his development, whether he gets adequate love and affection from his parents, whether he feels secure at home? If we come to the conclusion that the child does have everything which he needs at home, then our next step should be to make a study of his outside environment which will include his relations with his circle of friends in his neighbourhood as well as at school and his relations with his teachers. Might there be something wrong with the company that he has or is the child an introvert who finds it difficult to be friendly with others? Situations of this kind leave a child with a feeling of insecurity.

A study of the child's relations with his teachers will reveal the following points—whether the child is able to express himself freely before a teacher or whether he is scared? The child might wish to exchange thoughts with him or her if circumstances at home have left him with a feeling of insecurity. He would try to obtain that security from the teacher.

In case, the child neither has favourable circumstances at home nor outside, he will feel totally insecure. He will have none to share his thoughts with, he will feel more and more frustrated. Frustration if carried to a longer span will arouse in him a feeling of antagonism towards everyone and might turn him into an obstinate, rash, ill-mannered and indisciplined child.

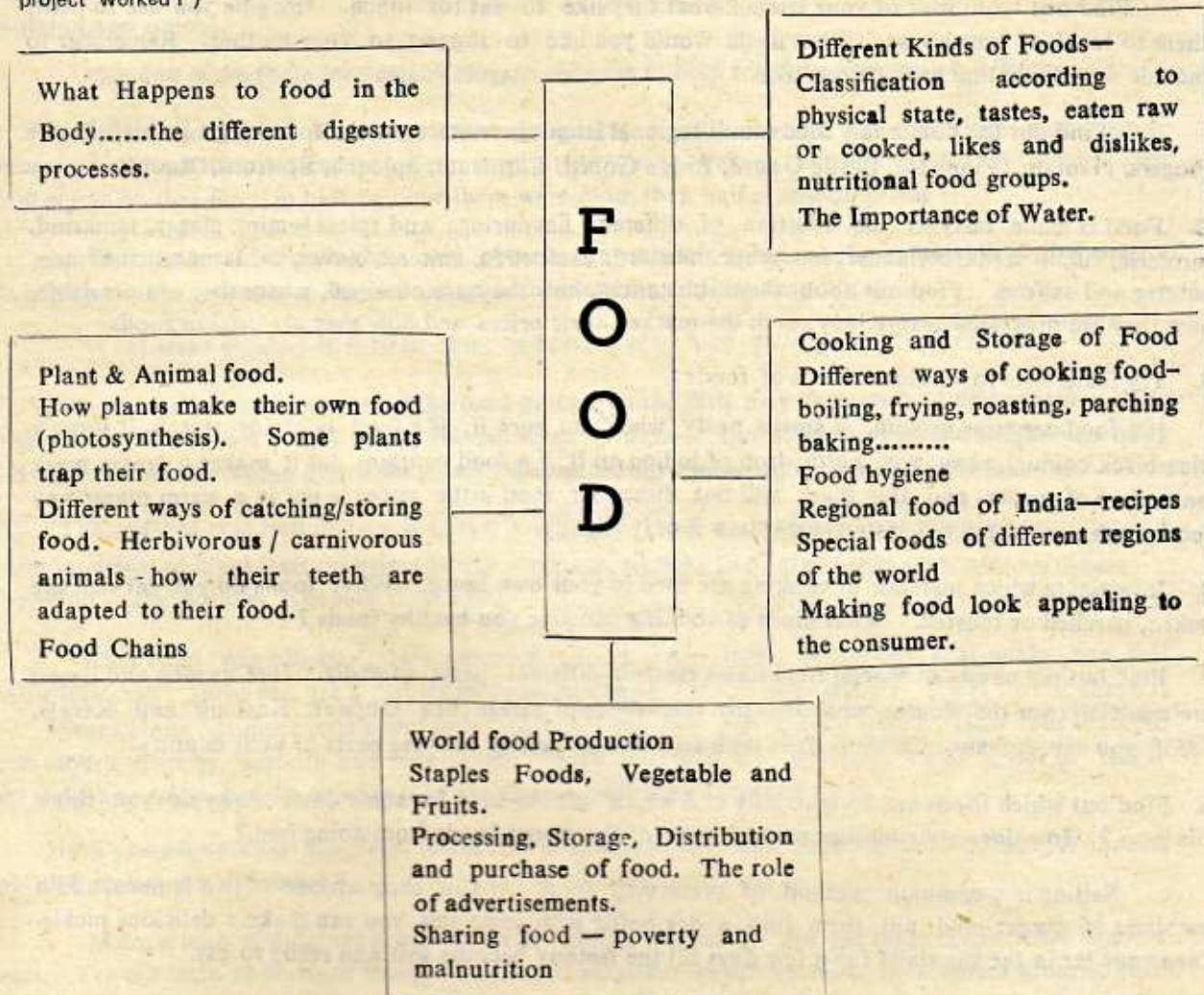
To help such a child we will have to provide him a favourable environment or a congenial atmosphere at least in school. A series of meetings with his parents, friends and teachers may bring about an effective change in his environment. Once the child's environment helps him to overcome the feeling of insecurity, he will gradually change.

Thus, the environment plays an important role in the development of the personality of every child. No child is born good or bad, he is made good or bad by the environment in which he grows. That being so, it is absolutely essential to see that a healthy intellectual, social and emotional environment is provided to a child at all costs. School should provide a sufficient number of situations which arouse the curiosity of the child. A good botanical garden, a well stocked library and laboratory create and sustain the interest of children in acquiring more and more knowledge. Teachers should allow children to express their doubts or inability to understand what is taught in class. Books for extra reading, discussions on current topics and participation in hobbies along with others develop the talents of a child to the maximum.

—Miss Veena K. Khanna
St. Fidelis School, Aliganj, Lucknow

FOOD.....GLORIOUS FOOD!

(As in previous issues we have collected together for our readers a whole lot of ideas for a project on food. Pick and choose and modify them to suit the needs of your pupils. Why don't you also write and tell us how your project worked?)



1. Make a list of as many different kinds of food as you eat. See if you can divide your list into groups in many different ways—

according to taste—sweet, sour, salty and bitter

according to whether they are solids or liquids; whether they are eaten raw or cooked.

Foods are of different types :

some give us energy—like bread, butter, rice and potatoes, sugar and sweet things

some help us to grow—milk, eggs, meat, fish and dals

some keep us healthy—fruit and vegetables, especially eaten fresh.

Collect pictures of the different kinds of foods, sort them into these groups and paste them in your books.

Make up a menu of a meal you would like to eat, taking care to include foods of each type in it.

Find out from four of your friends what they like to eat for lunch. Imagine you are to invite them to lunch at your house. What menu would you like to suggest to your mother. Remember to include something that each person likes.

Find out the commonly used Hindi/regional language names of the following : Brinjal, Ladies Fingers, Plantain, Pumpkin, Bottle Gourd, Ridge Gourd, Capsicum, Spinach, Beetroot, Radish.

2. Food is made tasty by the addition of different flavourings and spices—mint, ginger, tamarind, turmeric, cumin seeds, coriander, fenugreek, mustard, asafoetida, aniseed, cloves, cardamom, cinnamon, nutmeg and saffron. Find out about these substances, how they are obtained, where they are available, how they are processed before they reach the market, their prices and how they are used in food.

3. Try these tests for different kinds of foods :

If a food contains protein, it smells nasty when you burn it; if a food contains starch it turns a blue-black colour when you put a drop of iodine on it; if a food contains fat it makes a greasy mark on a piece of paper and this mark will not disappear even if the paper is put in a warm place; any food containing sugar will taste sweet—even if only slightly.

4. Investigate which methods of cooking are used in your own home. What foods do you eat that are baked, parched or roasted. What kinds of cooking can give you healthy foods ?

5. Find out the names of special food items made in different parts of India. Just as idlis and dosais are made all over the South, what are the specialities of places like Gujarat, Kashmir and Kerala. See if you can exchange simple recipes with friends who belong to these parts of your country.

6. Find out which foods are bought daily and which can be kept for some days. Why do you think this is so ? How does your mother prevent some of the stored foods from going bad ?

Salting is a common method of preserving food. If you chop up one or two lemons, add a few slices of ginger and put them into a dry bottle with some salt, you can make a delicious pickle. Keep your jar in the sun daily for a few days till the lemons become soft and ready to eat.

Sugar also serves as preservative. Find out from someone how jams are made. Write down the recipe in clear, precise terms. Make sure that you put down all the ingredients in the correct quantities and the steps in order.

Find out how milk is pasteurised to keep it from going bad. If you have a large milk scheme dairy in your town, visit it and find out about the processes that milk undergoes there. Write an accurate description of these.

7. You know that some vitamins are destroyed during the process of cooking. Here are some tips to prevent or reduce this loss.

Put vegetables into boiling water, just sufficient for cooking them. Avoid using baking soda; the vegetables may look green but lose their vitamins. Adding tamarind to some vegetables helps retain vitamins. Use the water left over from boiling vegetables in soups. Cut vegetables into large pieces or peel very thinly. Wash them before cooking. Use the leaves of vegetables like radish, knolkhol and onions.

Can you make these into catchy slogans or verse to help someone remember all these tips?

8. Some years ago a group of research workers caught eight houseflies, infected them with various germs and allowed them to crawl over some germ-free food. Fifteen minutes later they found over 7000 germs on that food; in half an hour there were more than half a million germs!

Visit the local halwai's shop and observe the activities going on there. On your return write a list of suggestions to improve the cleanliness and functioning of the shop.

What steps would you take at home to prevent your food getting spoilt by germs?

9. When you feed pets, the sound of the food going into the dish may be enough to bring them rushing to the meal. What sort of feelings do you get when you hear the sounds of thalis and katoris being laid out for a meal. Think and write about the nice sounds connected with food and drink.

10. "The smell of that buttered toast simply talked to Toad and with no uncertain voice; talked of warm kitchens, of breakfasts on bright frosty mornings, of cosy parlourside fires on winter evenings..." The Wind in the Willows, Kenneth Grahame.

That toast was obviously very special for Toad. Are there any foods that make you feel rather like that. Have you got a picture of your favourite food in your mind? What sort of shape is it? What colour? It must taste absolutely delicious - can you describe its taste? How does it feel in your mouth - crunchy, smooth and melt-in-the-mouth, hot, cold, icy, slippery. Think about it, feel it and write and tell your friends what it is like to be eating your favourite food.

11. Have you ever noticed that food tastes less interesting when you have a cold? What is it about a cold that makes this difference?

Make a map of different areas of your tongue to see if you get some tastes better in some areas. Try the taste of drops of lemon juice, salt solution, sugar solution in different areas of your tongue. Wipe your tongue before you change from one mixture to another.

12. If you leave a bowl of sugar uncovered, chances are that ants will get at it. They like that food! Try to imagine yourself as a small ant climbing into an enormous bowl of sugar. Write about your experiences.

13. When explorers have been lost and desperate for food, they have tried to find something that would stop the empty ache in their stomachs or the dry feeling in their throats. Sucking pebbles or a piece of wood helps them; but they will soon feel hungry again. Neither wood nor stone contains food that the body can use. Imagine that you are stranded on a desert island, where there are no people to help you. Your supplies of food are over and there is no water in sight. What will you find that is safe to eat or drink?

14. Can you think up a new unusual sort of food or drink? Look at as many food advertisements as you can, then try to make up an advertisement that will help you sell your invention. You may need to tempt buyers with special offers, large coloured pictures and catchy slogans!

Now cut out words and pictures of foods from magazines and make up a really horrible advertisement that would put you off food for good!

15. Soya bean is a crop that provides a lot of protein, is cheap to grow and easy to harvest. Find out where it is grown in our country and how it is used in foods.

16. Find out from your mother how much she spends very month or week on food. See if you can plan a meal for your family spending not more than two rupees per person. You may need your mother's help for this.

17. Earthquakes, war, floods and disease are some reasons why food becomes scarce in some parts of the world. Think of foods which could be used as substitutes for people in need. For example, potatoes could perhaps be used instead of rice.

Imagine that you are a newspaper correspondent, visiting a disaster area two weeks afterwards. Write an eye-witness account for your newspaper, describing how the disaster occurred, the damage caused, how it has affected the lives of the people and how they have tried to cope—especially acute with food shortages.

18. One of the worst famines in modern times happened in Bihar in 1967 because the monsoon rains did not come at the right time and the crops failed. Nearly 25 million people suffered from a serious food shortage. Drinking water became another serious problem and as wells started to dry up many villagers moved from their homes into the already overcrowded cities. Find out some of the things that a country can do to try and prevent such large-scale food shortages. Discuss these with your classmates and teacher.

19. Look at a population map of the world and try to find out if people are spread evenly over the surface of the world. Which countries have the fewest people? the most people? Do you think the growth of the population will have an effect on food supplies?

20. This chain shows you how many people take part in providing you with a loaf of bread—
Wheat seed merchant.....Farmer.....transporter.....miller.....baker.....delivery man....
shopkeeper.

See if you can make up similar chains for other common items of food that you eat.

21. Find out about the different kinds of teeth you have.

Tooth decay is caused by bacteria which live on the sugar left in the mouth after your meal. While we all have bacteria in our mouths, when there is food lodged between the teeth there will be even more bacteria. What steps will you take to reduce the chances of your teeth decaying? Find out what dentists call cavities in your teeth.

22. Animals are generally of two kinds—herbivores and carnivores. Do you know what these words mean? Find out if the teeth of these two types of animals are the same or different. Why do you think this so? What differences are there in the way they feed?
23. Find out as much as you can about the teeth of the elephant. What happens as they wear out?
24. In nature there is a chain reaction between plants, animals, Man and the food they each require. Find out more about this natural food chain and look for as many examples as you can.
25. Some plants attract and kill insects. One of these is the Venus Fly trap. Find out something about this plant.
26. Find out something about bees; they make and store their food.
27. Find out what happens to a meal of a jam sandwich, some potato chips, green salad and a glass of milk once you have eaten it.
28. Wouldn't you find it difficult to cook, eat or swallow food without water? How many glasses do you drink daily? Find out to what use it is put in your body.



Sugar Crystals

Take a small glass jar and fill it with boiling water. Drop in a good quantity of sugar and stir well. When it is all dissolved pour in still more and stir again. Continue like this until the water is so saturated with sugar that no more of it will dissolve.

Now take a cardboard and punch a number of holes in it. Through each hole thread a piece of thin string. Put the card on top of the jar and let the strings dangle in the saturated sugar solution. In a day or two the strings will have adhering to them thousands of very attractive sugar crystals. If you have cleaned the jar thoroughly, there is no reason why you should not eat them too! Sugar candy is made in much the same way.

An Experiment with Sound Waves

Stretch a piece of string tightly across the room and on it pin a silk handkerchief or any other handy article made of silk—the larger the better. When it is hanging vertically, place your ear close to it, about 2 or 3 cm away. Get a friend to 'twang' an ordinary table fork on the other side of handkerchief. You will hear the musical sound quite plainly as though the silk fabric was not there between your ear and the fork.

Now dip the handkerchief in water and hang it up again. Repeat the experiment. This time the sound is almost inaudible. If the fabric is large it would be practically unheard. Any sound you hear comes round the side. Why?

In the first case the sound waves pass through air uninterrupted. In the second case the media are air-water-air and the waves are reflected when they reach the water and are lost to your ears.